

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of

Wireless E911 Location Accuracy Requirements)	PS Docket No. 07-114
)	
Revision of the Commission's Rules to Ensure)	CC Docket No. 94-102
Compatibility with Enhanced 911 Emergency)	
Calling Systems)	
)	
Association of Public-Safety Communications)	
Officials-International, Inc. Request for)	
Declaratory Ruling)	
)	
E911 Requirements for IP-Enabled)	WC Docket No. 05-196
Service Providers)	

**COMMENTS OF
TELECOMMUNICATION SYSTEMS, INC. (TCS)**

TeleCommunication Systems, Inc. ("TCS"), by and through its undersigned counsel, respectfully submits the following comments in response to the Federal Communications Commission's (the "Commission") Notice of Proposed Rulemaking ("NPRM") seeking comments on the several issues relating to Enhanced 911 ("E911") autolocation requirements for interconnected Voice over Internet Protocol ("VoIP") service providers.¹

¹ *Wireless E911 Location Accuracy Requirements, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Association of Public –Safety Communications Officials-International, Inc. Request for Declaratory Ruling, 911 Requirements for IIP-Enabled Service Providers*, PS Docket No. 07-114, CC Docket No. 94-102, WC Docket No. 05-196, Notice of Proposed Rulemaking (rel. June 1, 2007) ("*E911 NPRM*").

I. INTRODUCTION AND OVERVIEW

A. ABOUT TCS

TCS provides E911 services as a Mobile Positioning Center (“MPC”) and VoIP Positioning Center (“VPC”) to numerous wireless and VoIP service providers across the United States. TCS’s data centers process approximately 50 percent of all nomadic VoIP and wireless E911 calls, or about 40,000,000 calls annually.

B. THE NPRM

In the NPRM, the Commission sought comment on whether and to what extent providers of interconnected VoIP services should be required to provide Automatic Location Identification (“ALI”), and whether and to what extent they should be subject to the same location accuracy requirements that apply to certain services provided by circuit-switched commercial mobile radio service (“CMRS”) carriers under Section 20.18 of the Commission’s rules. The Commission tentatively concluded that, to the extent that an interconnected VoIP service may be used in more than one location, providers must employ an automatic location technology that meets the same accuracy standards that apply to those CMRS services.²

As more fully discussed below, TCS submits that the Commission should not require nomadic VoIP service providers to employ autolocation technologies that meet the same accuracy standards that are applicable to CMRS carriers.

² *E911 NPRM* at ¶ 18.

II. THE COMMISSION SHOULD NOT IMPOSE AUTOLOCATION TECHNOLOGY REQUIREMENTS ON NOMADIC VOIP SERVICE PROVIDERS.

A. THE COMMISSION SHOULD NOT REQUIRE NOMADIC VOIP SERVICE PROVIDERS TO EMPLOY AUTOLOCATION TECHNOLOGIES THAT MEET THE SAME ACCURACY STANDARDS THAT APPLY TO CMRS CARRIERS.

To put the whole issue in proper perspective, it is important to distinguish nomadic VoIP from CMRS. Nomadic VoIP is significantly different from CMRS in several distinct ways, the most salient of which relates to the provision of registered address. Because CMRS callers are highly mobile, providing a registered address for CMRS would be extremely difficult. This issue is addressed by implementing autolocation technologies.

On the other hand, nomadic VoIP users who properly register their address provide the level of location accuracy required by Public Safety to render emergency assistance. In particular, registration provides the actual address, including floor and apartment number, of the nomadic VoIP caller.

Applying even the more stringent of the two current wireless standards would reduce the current accuracy provided for the vast majority of VoIP calls since an error of 50m could easily place the believed location of the caller in the next apartment or, even worse, possibly up to 15 stories away from the VoIP caller's actual location.

B. AUTOLOCATION REQUIREMENTS WILL NOT ADDRESS THE PERCEIVED PROBLEMS WITH NOMADIC VOIP SERVICE.

In the absence of any definitive statement of explanation from the Commission for its tentative conclusion to require VoIP service providers to deploy autolocation technologies to support nomadic VoIP service, TCS believes that the Commission perceives two problems with nomadic VoIP that it is seeking to address. First, nomadic VoIP customers may occasionally err

in providing their own address. Second, nomadic VoIP customers may occasionally fail to register their correct address when they move. We believe these are the perceived problems since an accurately registered nomadic location would meet the most stringent location requirements required by Public Safety to dispatch emergency assistance. These perceived problems, however, relate to getting accurate registration, and not to getting accurate location. In other words, the principal concern is not whether the location of the subscriber can be pinpointed in the event of an emergency, but rather whether the information provided by the VoIP subscriber is accurate to begin with. As a general rule, conscientious subscribers are easily able to provide their accurate location through a broad range of registration processes provided by the VoIP service provider—processes for which the VoIP service provider often provides comprehensive education and training for their end users. Indeed, VoIP service providers must comply with the subscriber notification, acknowledgment, and labeling requirements set forth in section 9.5(e) of the Commission’s rules.³ Accordingly, requiring VoIP service providers to employ autolocation technologies that meet the same accuracy standards that apply to CMRS carriers would not address the real issue.

C. CURRENTLY AVAILABLE AUTOLOCATION TECHNOLOGIES ARE UNSUITABLE FOR NOMADIC VOIP SERVICE.

There are two primary modes of autolocation for nomadic phones available in rudimentary form today: port tracking and “handset”-based technology, such as GPS/AGPS.

Port tracking requires a nomadic device to be detected by the Access Network Provider, which then relates the port and MAC address to a civic location (*e.g.*, street address). An effective port tracking solution would either require a national database in which all IP access ports were tabulated with their civic address, or a nationwide coordination between access

³ See 47 C.F.R. § 9.5(e) (requiring subscriber notification and labeling requirements).

network providers' data. The former would be similar to the Automatic Location Identification ("ALI") databases maintained by various E911 service providers across the country today, except that the port database would have to be national in scale (due to the nomadic nature of the VoIP telephones). Every Access Network Provider would need to input its port/address data. Port tracking would provide an actual civic (and hopefully Master Street Address Guide-valid) address.

Port tracking could eventually meet the technological challenge of providing sufficiently accurate addresses for 911 dispatch purposes, but there does not appear to be a commercial market for this service today. Moreover, it is unclear to TCS whether the Commission or any other entity has the authority to require Internet Service Providers ("ISPs") to update any such database whenever they install new service. Furthermore, at present, there are no standards by which ISPs could update such a database even if they wanted to. Indeed, most ISPs would resist any voluntary effort to release this proprietary information.

'Handset'-based technology, such as GPS/AGPS, on the other hand, requires that every nomadic device must be outfitted with a GPS chip. Unlike wireless phones, most nomadic devices are used indoors, where GPS is minimally effective. GPS solutions would provide a coordinate location, *i.e.*, a latitude and longitude. Measurement techniques optimized for outdoor position determination do not fit the primary residential or business enterprise deployment model into which most nomadic VoIP devices are found. Solutions which produce coordinate location results will have a very difficult time to achieve the accuracy required to identify a unique address, since the width of a wall could determine the difference between opening the correct apartment door.

It should be noted that measurement-based location technologies, such as triangulation, are best suited to mobile VoIP or wireless phones, but are not appropriate for nomadic phones. Measurement techniques such as triangulation, when optimized for indoor position determination, rely upon wireless transmission signals, which do not exist with nomadic phones because they are not wireless.

Likewise, assisted GPS (AGPS) technologies currently deployed in wireless networks today usually take well over 10 seconds to provide a first location fix which would be used for routing the call to the correct Public Safety Answering Point (“PSAP”). Since emergency calls generally need to be routed within two to three seconds of placing the call, current AGPS technologies would not provide a location fix in the time frame required to properly route the call. For wireless networks, this is handled by providing a more coarse level of location accuracy—the cell site/sector that carries the call—for providing the initial route. For nomadic VoIP, however, no such coarse level of location accuracy is available today to provide initial routing instructions. Thus, this discrepancy would require changes to every VoIP provider in the country and would have the added undesirable impact of confusing the caller who is used to calls being placed and answered in far shorter time periods.

Even if the GPS/AGPS, or other Location Determination Technology (LDT), were effective in determining locations accurate to within one (1) inch, the corresponding data layer maps would not be guaranteed consistent, potentially plotting the location in an apartment next door or across the street. For any region, the data layer used to pinpoint a coordinate location is not synchronized to actual locations. Different PSAPs use different mapping applications and TCS has already experienced situations in which a GPS location for single cellular phone using two different baseline map datasets can be several hundred yards apart.

D. THE FOCUS SHOULD BE ON IMPROVING THE CURRENT REGISTRATION PROCESSES AND PRACTICES RATHER THAN ON IMPOSING ADDITIONAL AUTOLOCATION REQUIREMENTS ON NOMADIC VOIP SERVICE.

The imposition of wireless accuracy requirements and coordinate-based location determination technology upon nomadic VoIP service would trade today's solution—a solution in which precise MSAG valid addresses are provided with occasional user errors—for a solution in which every location would be so vague that the responders would have less assurance as to which door to 'kick down' to bring help. Even if, for example, GPS/AGPS accuracy were good enough to direct the responders to the correct door 95% of the time, the other 5% would probably exceed the number of user errors that exist in the current registration system.

Thus, imposing wireless accuracy standards upon nomadic VoIP service providers could assist with a small percentage of the calls, while significantly reducing the location accuracy of the vast majority of VoIP calls today. Coordinate-based (*e.g.* GPS/AGPS/triangulation) autolocation solutions do not result primarily in the same usable civic location form which most PSAPs are accustomed to, and will likely never meet the accuracy standards that are available in nomadic solutions today using civic location. Further, such solutions will require substantial infrastructure and end device upgrades to work indoors, which is where most nomadic phones are used. Port tracking may be a viable solution, but little commercial impetus exists to create the necessary local and/or national databases and national infrastructure required by the VoIP service providers so that they can have access to the required address data.

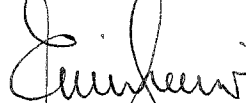
Although the consequences of these failures can be severe, the frequency of these possible failures have never been quantified or documented. TCS respectfully submits that more information should be collected to quantify the scope of any problems being experienced due to current location registration methods, especially where comprehensive options for, and consumer

education related to, such methods are already being provided, rather than requiring the deployment of an autolocation technology which could easily reduce the current level of location accuracy for the vast majority of today's nomadic VoIP callers.

III. CONCLUSION

TCS commends the Commission for seeking ways to ensure that E911 service meets the needs of public safety and the American people. However, as explained at length above, there is presently no need to impose upon nomadic VoIP service providers autolocation technology requirements that meet the same accuracy standards that apply to CMRS carriers. Rather, the focus should be on finding ways to address the perceived issues associated with improperly or inaccurately registered nomadic subscribers. To this end, TCS believes that the most appropriate solution at this time is to gather additional information to determine and/or quantify the extent and scope of the perceived problems with the current registration processes and practices.

Respectfully submitted,



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